Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-23 are pending, with claims 6-9 and 11-16 being under consideration, and claims 6, 9 and 11 being the independent claims. Claims 1-5, 10 and 17-23 are withdrawn from consideration. Claims 6-8 are sought to be amended. These changes are believed to introduce no new matter, and their entry is respectfully requested. Based on the above amendments and the following remarks, Applicants respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Support for Amendments

The amendment to the specification on page 12, after line 10 is merely an insertion into the specification to fulfill the requirements under 37 C.F.R. § 1.807(b).

Support for the amendment to claims 6-8, regarding the insertion of "isolated," is found throughout the specification, and *inter alia*, in the methods of page 8, starting at line 9, and bridging over to page 9, line 20, and page 12, lines 25-28. Support for the amendments to claim 6(c) can be found in the specification, including at page 5, lines 8-13 and page 7, lines 3-9. The amendment to claim 7 is to merely re-word the claim in more conventional Markush format. Therefore, the applicants believe that the amendments introduce no new matter.

Objection of Specification (Withdrawn)

Applicants acknowledge, with thanks, the withdrawal of the objection to the specification regarding information about the application to which priority was claimed.

Rejections under 35 U.S.C. § 112, second paragraph (Withdrawn)

Applicants acknowledge, with thanks the withdrawal of the rejections of claims 6-9 and 11-16, under 35 U.S.C § 112, second paragraph.

Double Patenting Rejections (Withdrawn)

Applicants acknowledge, with thanks the withdrawal of the provisional rejection of claims 6-8 under the judicially created doctrine of obviousness-type double patenting over co-pending U.S. Patent Application 09/962,303.

Applicants acknowledge, with thanks the withdrawal of the rejection of claims 6-8 under the judicially created doctrine of obviousness-type double patenting over co-pending U.S. Patent No. 5,939,307.

Rejection under 35 U.S.C. § 102(b) (Withdrawn)

Applicants acknowledge, with thanks the withdrawal of the rejection of claims 6-8 under 35 U.S.C. § 102(b) with respect to the reference by Sahm *et al.* (*Ann. N.Y. Acad. Sci. 782*:25-39, (1996)).

Rejection under 35 U.S.C. § 112, first paragraph (Maintained)

The examiner maintained the rejection of claims 11-16 under 35 U.S.C. § 112, first paragraph, (Office Action mailed 11/5/02, Paper No. 9) as "failing to provide an adequate written description of the invention and failing to provide an enabling disclosure, with regard to the deposit issue."

The applicants acknowledge, with thanks, that the examiner has stated that the applicants have provided deposit notices from the depository, the depository accession numbers and established "that the deposited bacterial strains are the same as the ones described in the specification and that the deposited bacterial strains were in the Applicant's possession at the time of filing." The examiner also stated that "[a] statement has been provided by Applicants' attorney stating that all restrictions o [sic] the availability of the deposited strains to the public will be irrevocably removed upon the granting of a patent." However, the examiner stated that the specification did not fully comply with the deposit rules of 37 C.F.R. § 1.801-1.809 in that the name and address of the depository where the strains have been deposited was not stated in the specification. The applicants have directed the entry into the specification (Page 12, after line 10) of the name, address and date of the deposit of the claimed bacterial strains. The applicants believe that the examiner's concerns have been addressed and respectfully request withdrawal of the rejection.

Rejection under 35 U.S.C. § 101 (New)

The examiner has rejected claims 6-8 under 35 U.S.C. § 101, as being directed to non-statutory subject matter. The examiner asserted that the "[i]nstant claims, as written do not sufficiently distinguish over a bacterial strain, as it exists naturally, *i.e.*,

a natural mutant, because the claims do not particularly point out any non-naturally occurring differences between the claimed product and the naturally occurring product." The examiner suggested amending the claim to include the word "isolated" to overcome the rejection. The applicants have amended claims 6-8 to include the word "isolated," as suggested by the examiner and therefore, request that the rejection be withdrawn.

Rejection under 35 U.S.C. § 112, first paragraph (New)

The examiner rejected claims 6-8 under 35 U.S.C. § 112, first paragraph as containing new subject matter. In particular, the examiner stated that "[t]he limitation in the base claim: 'impaired' raffinate resistance does not have descriptive support in the specification."

The applicants have amended base claim 6, to more closely reflect the wording found throughout the specification, and in particular on page 5, lines 10-14. Thus, the applicants believe that the amended claim 6 addresses the concerns of the examiner and request that the rejection be withdrawn.

Rejections under 35 U.S.C. § 102 (New)

The examiner rejected claims 6-8 under 35 U.S.C. § 102(b) as being anticipated by Shijo *et al.* (U.S. Patent No. 5,077,207, herein referred to as the "'207 patent"). The examiner asserted that

> Shijo *et al.* disclosed a bacterial strain, for example, a *Brevibacterium* sps. that produces an amino acid, such as threonine, wherein the strain was obtained from a parent strain. The parent strain was grown in a culture medium containing ammonium sulfate, salts, a carbohydrate such as glucose, L-histidine and soybean hydrosylate, and a mutant

> resistant strain was selected which overproduced or exhibited maximum production of the amino acid compared to the parent strain. The prior art medium contains at least 1% raffinate as described on page 7, lines 4-6 of the specification is inherent from the teachings of Shijo *et al.* since it includes ammonia sulfate, an amino acid such as L-histidine, salts, a carbohydrate such as glucose, and other amino acids and/or carbohydrates intrinsically present in soybean hydrolysate. That the mutant bacterial strain had an impaired raffinate resistance compared to the parent strain is also inherent from the results obtained by Shijo *et al.* [citations omitted]

In the present specification on page 7, lines 3-8, "raffinate" refers to a "*wastestream product* from an *ion exchange operation* for lysine recovery." [emphasis added by applicants] Additionally, the specification states that "[s]terilization of a raffinate-containing medium using heat treatment produces amino acid derivatives and other metabolic antagonists which cause the inhibition of culture growth."

Therefore, the claimed isolated bacterial strains grow in a medium isolated from an ion exchange process to isolate lysine, and which has been heat-sterilized. Of necessity, the heat sterilization would occur after the medium has been isolated from the ion exchange operation.

The '207 patent does not teach an ion chromatography operation nor a heat sterilization step. Also, the '207 patent discloses a method for producing L-threonine, not L-lysine as the present application claims. Also, Shijo *et al.* cannot anticipate the present invention because it does not teach or suggest the creation of a microorganism that grows on raffinate medium which has been heat sterilized and produces amino acids.

Therefore, since the culture medium of the '207 patent is not the same as the claimed invention, nor does it disclose the creation of a raffinate-resistant organism, each and every limitation of the claims have not been met by Shijo *et al.*, the claims are not

anticipated. Accordingly, applicants respectfully request that the rejection be withdrawn.

The examiner has also rejected claim 9 under 35 U.S.C. § 102(b) as being anticipated by Nakanishi *et al.*, (U.S. Patent No. 4,657,860, herein, the "'860 patent").

The examiner asserted that "Nakanishi *et al.* disclosed a *Corynebacterium* strain which produces about 34 to 36 g/l of L-lysine in 24 hours when grown in a bacterial culture containing at least 1% raffinate, i.e., glucose, ammonium sulfate, various salts, and soybean meal (inclusive of amino acids). See Example 2 and Table 2."

In the present specification on page 7, lines 3-8, "raffinate" refers to a "*wastestream product* from an *ion exchange operation* for lysine recovery." [emphasis added by applicants] Additionally, the specification states that "[s]terilization of a raffinate-containing medium using heat treatment produces amino acid derivatives and other metabolic antagonists which cause the inhibition of culture growth."

Therefore, the claimed isolated bacterial strains grow in a medium isolated from an ion exchange process to isolate lysine, and which has been heat-sterilized. Of necessity, the heat sterilization would occur after the medium has been isolated from the ion exchange operation.

The '860 patent does not teach the growth of the cells, or use of the wastestream medium product after the ion chromatography operation (see col. 4, lines 51-56), nor a heat sterilization step. Additionally, the '860 patent teaches that 38 g/l of L-lysine accumulated in the culture medium after ***3 days*** (see col. 5, lines 8-10), wherein claim 9 requires that at least about 10 g/l L-lysine is produced in ***24 hours***. Therefore, since the culture medium of the '860 patent is not the same as the claimed invention and each and

every limitation of the claim has not been met by Nakanishi *et al.*, the claim is not anticipated. Accordingly, applicants respectfully request that the rejection be withdrawn.

The examiner has additionally rejected claims 6-8 under 35 U.S.C. § 102(b) as being anticipated by Sano *et al.*, (U.S. Patent No. 4,346,170, herein, the "'170 patent").

The examiner states that

> Sano *et al.* taught an *E. coli* strain which overproduces L-lysine. The lysine-producing transformant (i.e., mutant) is obtained from a parent recipient which was rendered auxotrophic to L-lysine, i.e., mutagenized. The transformant is obtained by growing in a culture medium containing amino acids or casamino acid; glucose, sucrose or lactose; various salts; molasses and ammonium salts. The medium contains ammonium sulfate. The selection of L-lysine-producing mutants or transformants growing in the culture medium (i.e., those with impaired raffinate resistance) is taught. ... That the prior art culture medium contains at least 1% raffinate as described on page 7, lines 4-6 of the specification is inherent from the teachings of Sano *et al.* since it includes ammonia sulfate, amino acids, various salts, a carbohydrate such as glucose, sucrose or lactose. [citations omitted]

In the present specification on page 7, lines 3-8, "raffinate" refers to a "*wastestream product* from an *ion exchange operation* for lysine recovery." [emphasis added by applicants] Additionally, the specification states that "[s]terilization of a raffinate-containing medium using heat treatment produces amino acid derivatives and other metabolic antagonists which cause the inhibition of culture growth."

Therefore, the claimed isolated bacterial strains grow in a medium isolated from an ion exchange process to isolate lysine, and which has been heat-sterilized. Of necessity, the heat sterilization would occur after the medium has been isolated from the ion exchange operation.

The '170 patent does not teach an ion chromatography operation nor a heat sterilization step. Also, the '170 patent discloses a method for producing L-lysine using an *E. coli* microorganism that was produced by incorporating a hybrid plasmid into a recipient *E. coli* and recovering the L-lysine accumulated in the culture medium (see column 2, lines 10-20). Therefore, the '170 patent cannot anticipate the present invention because it does not teach or suggest the selection of a microorganism that has an improved raffinate-resistance over a parental strain and produces amino acids.

Therefore, since the culture medium of the '170 patent is not the same as the claimed invention, nor does it disclose the selection of a raffinate-resistant organism, each and every limitation of the claims have not been met by Sano *et al.*, and thus, the claims are not anticipated. Accordingly, the applicants respectfully request that the rejection be withdrawn.

Conclusion

All of the stated grounds of objection and rejection have been properly accommodated or traversed. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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